

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

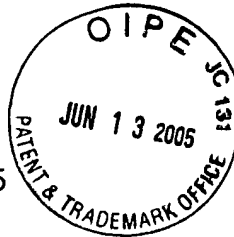
In re Patent Application of:

Genevieve Bell et al.

Application No.: 10/038,365
Docket Number: P13661

Filed: 1/3/2002

For: Secure Digital Photography System



Examiner: Kevin Gagliostro

Art Unit: 2615

AFFIDAVIT UNDER 37 C.F.R. 1.131

STATE OF OREGON)
WASHINGTON COUNTY)

I, Genevieve Bell, first being duly sworn, do hereby state that:

1. I am one of the inventors of the above-referenced patent application.
2. I am an employee for Intel Corporation, the assignee of the above-referenced patent application.
3. Attached is a true copy of the original invention disclosure for this invention. This invention disclosure documents my invention. I prepared the invention disclosure prior to September 21, 2001. The invention disclosure was witnessed by my supervisor, fellow Intel employee Eric Dishman on September 21, 2001. The invention disclosure establishes a date of conception of my invention no later than September 21, 2001. This date is earlier than the effective date of the cited Gennetten et al. reference (US Patent Application Publication 2003/0081950 A1), filed on October 31, 2001, and published on May 1, 2003.
4. The invention disclosure was submitted to the Intel legal department for processing according to Intel's normal business practices.

5. The patent application for my invention was filed on January 3, 2002, thereby establishing a date of constructive reduction to practice for the invention.
6. During the period from the date of submission of the invention disclosure on September 24, 2001, to the filing date of January 3, 2002, the invention disclosure was diligently processed by the inventors and other employees of Intel according to the normal business practices of Intel Corporation.
7. The invention disclosure was received by the Intel patent database group on September 24, 2001, and a file was opened for this invention on November 12, 2001.
8. On December 10, 2001, I met with an Intel patent attorney, Steven Skabrat, to discuss my invention. Subsequent to this time, I diligently worked with Steven Skabrat in providing information about the invention and in reviewing drafts of the patent application until filing of the application on January 3, 2002.

Respectfully submitted,

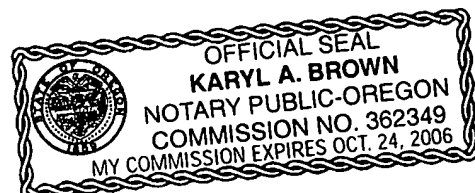
Dated: 6/7/05


Genevieve Bell

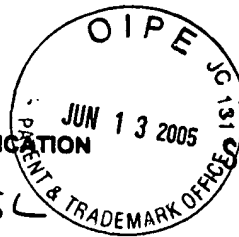
Sworn to and subscribed before me this 7th day of June, 2005.


Notary Public

My commission expires : 10/24/06



**INTEL INVENTION DISCLOSURE
ATTORNEY-CLIENT PRIVILEGED COMMUNICATION**
located at <http://legal.intel.com>



SEP 24 2001

DATE: 21st September 2001

It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. When completed and signed, please return this form to the Legal Department at JF3-147. You can submit electronically via e-mail to "invention disclosure submission" if all of the information is electronic, including drawings and supervisor approval. If you have any questions, please call 264-0444.

1. Inventor: Bell Genevieve
Last Name First Name Middle Initial
Phone 503 264 7510 W/S: JF3-377 Fax # 503 264 2625
Citizenship: AUSTRALIA WWID: 10603676 Contractor: YES ☐ NO ☒
Inventor E-Mail Address: genevieve.bell@intel.com
Home Address: 209 NW 23rd Ave #302
City Portland State OR Zip 97210 Country USA
*Corporate Level Group (e.g. IAG, NCG, NBG) NBG Division IAL Subdivision ARL
Supervisor* Eric Dishman WWID 10623600 Phone 503 264 2586 M/S: JF3-377

2. Inventor: Brooke Timothy L
Last Name First Name Middle Initial
Phone 503 264 8512 W/S: JF3-377 Fax # 503 264 2625
Citizenship: United Kingdom WWID: 10637522 Contractor: YES ☐ NO ☒
Inventor E-Mail Address: timothy.l.brooke@intel.com
Home Address: 2110 NW Flanders Street #3
City Portland State OR Zip 97210 Country USA
*Corporate Level Group (e.g. IAG, NCG, NBG) NBG Division IAL Subdivision ARL
Supervisor* Eric Dishman WWID 10623600 Phone 503 264 2586 M/S: JF3-377

3. Inventor: boyd dana
Last Name First Name Middle Initial
Phone (401) 261-9723 W/S: JF3-377 Fax # 503 264 2625
Citizenship: United Kingdom WWID: 10662677 Contractor: YES ☐ NO ☒
Inventor E-Mail Address: danah@media.mit.edu TERMED-SH
Home Address: MIT Media Lab, 20 ames st e15-443
City Cambridge State MA Zip 02139 Country USA
*Corporate Level Group (e.g. IAG, NCG, NBG) NBG Division IAL Subdivision ARL
Supervisor* Eric Dishman WWID 10623600 Phone 503 264 2586 M/S: JF3-377

4. Inventor: Needham Bradford H
Last Name First Name Middle Initial
Phone 503-264-8911 W/S: JF2-58 Fax # 503-264-6068
Citizenship: USA WWID 10064170 Contractor: YES ☐ NO ☒
Inventor E-Mail Address: brad.needham@intel.com
Home Address: 26955 NW Dorland Rd.
City North Plains State OR Zip 97133 Country USA
*Corporate Level Group (e.g. IABG, NCG, CEG) NBG Division IAL Subdivision ASL
Supervisor* John Throckmorton WWID 10064342 Phone 503-264-1668 M/S: JF2-58

SEP 27 2001
PATENT DATABASE GROUP
INTEL LEGAL TEAM

*If you are unsure of this information, please discuss with your manager.

(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

2. Title of Invention: Authenticam

3. What technology/product/process (code name) does it relate to (be specific if you can):
Digital Photography

4. Include several key words to describe the technology area of the invention in addition to # 3 above: Digital Photography, Security, Authentication, Encryption

5. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): 0%

6. (a) Has a description of your invention been, or will it shortly be, published outside Intel:
NO: X YES: _____ If YES, was the manuscript submitted for pre-publication approval? _____
IDENTIFY THE PUBLICATION AND THE DATE PUBLISHED: _____
(b) Has your invention been used/sold or planned to be used/sold by Intel or others?
NO: X YES: _____ DATE WAS OR WILL BE SOLD: _____

ATTORNEY-CLIENT PRIVILEGED COMMUNICATION

- (c) Does this invention relate to technology that is or will be covered by a SIG (special interest group)/standard/ or specification?

NO: X YES: _____ Name of SIG/Standard/Specification: _____

- (d) If the invention is embodied in a semiconductor device, actual or anticipated date of tapeout? No

- (e) If the invention is software, actual or anticipated date of any beta tests outside Intel No

7. Was the invention conceived or constructed in collaboration with anyone other than an Intel blue badge employee or in performance of a project involving entities other than Intel, e.g. government, other companies, universities or consortia? NO: X YES: _____ Name of individual or entity: dana boyd was a Summer 2001 Intern. She is currently finishing her PhD at MIT Media Lab but was an Intel employee during the time the invention was created.

8. Is this invention related to any other invention disclosure that you have recently submitted? If so, please give the title and inventors: No

.....
**PLEASE READ AND FOLLOW THE DIRECTIONS ON
 HOW TO WRITE A DESCRIPTION OF YOUR INVENTION**

Please attach a description of the invention to this form and include the following information:

1. Describe in detail what the components of the invention are and how the invention works.
2. Describe advantage(s) of your invention over what is done now.
3. YOU MUST include at least one figure illustrating the invention.
If the invention relates to software, include a flowchart or pseudo-code representation of the algorithm.
4. Value of your invention to Intel (how will it be used?).
5. Explain how your invention is novel. If the technology itself is not new, explain what makes it different.
6. Identify the closest or most pertinent prior art that you are aware of.
7. Who is likely to want to use this invention or infringe the patent
If one is obtained and how would infringement be detected?

**HAVE YOUR SUPERVISOR READ, DATE AND SIGN COMPLETED FORM
 OR FORWARD IT ELECTRONICALLY VIA E-MAIL TO "INVENTION DISCLOSURE SUBMISSION"**

DATE:

9-21-01

SUPERVISOR:

James Eric Dethman

BY THIS SIGNING, I (SUPERVISOR) ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THIS
 DISCLOSURE, AND RECOMMEND THAT THE HONORARIUM BE PAID

Authenticam Description

Describe in detail what the components of the invention are and how the invention works.

The "authenticam" is a system/service that provides users of the system with a means of providing some certainty as to the origin of a digital picture.

The "authenticam" system comes in a number of components. These are a camera, a software viewer application/plugin and a secure file format. These components are described below.

The "authenticam" camera is a digital camera, which allows the users to take photographs in a similar way to existing digital cameras. However as the picture is being written to memory it is encoded in a secure format to memory within the camera. As well as image data being stored with each picture meta data such as name of camera owner, focal distance, white levels, f-stop and date and time are also encrypted with the image file. If GPS (global positioning system) were included location data could also be recorded.

In order to view the pictures a user will be required to attach the camera to a computer and upload the image files from the camera to the computer. The user must then use the "authenticam" viewer or browser to view the images. Because the file is encrypted as it is stored to memory within the camera it becomes extremely difficult to alter or manipulate the image. This provides the basic level of security for photographs.

The meta data is also available to be read within the viewer this also gives added assurance that this is a genuine picture of the subject taken. For example it would be possible to detect the difference between taking a picture of a photograph of a boat and actually taking a picture of a boat directly by comparing image meta data with the lighting conditions or focal distance required to take a picture of the subject. This provides a second level of security - forensic evidence - for photographs.

It is likely that "authenticam" pictures would be viewed in many applications such as Photoshop or web-browsers. An "authenticam" plug-in could be provided that would allow other applications to view or copy "authenticam" pictures to other formats. Of course once an "authenticam" picture is saved to JPEG for instance it loses its

authentication to being a "genuine photograph".

In order to allow for manipulation of "authenticam" pictures (eg cropping, colorizing etc) and to maintain the secure format a separate secure tool could be developed that would record the original file along with a full audit trail of alterations.

2. Describe advantage(s) of your invention over what is done now.

Currently it is very difficult to discern if a photograph has been manipulated or if the photograph is a genuine representation of the object taken.

This invention attempts to provide some evidence to support a photograph claim to authenticity in three ways:

First any file viewed with the "authenticam" viewer must have been taken with an "authenticam" camera. Currently realistic photographic renderings can be produced on a computer without any corresponding "real" scene and there is no obvious way to tell the difference between a true photograph and some computer renderings and this situation is likely to become worse as it becomes easier to create realistic computer rendering and alterations of images. The "authenticam" system addresses this problem by creating a system where only "authenticam" cameras are allowed to create "authenticam" files.

Second the lighting conditions and other metadata (for example location, date, time, camera owner identification) are stored along with the image. This provides further evidence that the picture is genuine.

Third all the meta data and image data is strongly encrypted making it extremely difficult to fake a photograph and also to alter or manipulate an image once it has been taken by an "authenticam" camera.

Potential uses for this system include:

- presentation of evidence in court cases
- authenticam photographs on websites such as ebay guarantee that the image has not been altered

BEST AVAILABLE COPY

BEST AVAILABLE COPY

BEST AVAILABLE COPY

it one figure
software,
tation of the

existing line of cameras while also extending
and evolving from our current product range.
The invention also plays to Intel brand
strengths such as strong technology,
reliability and security.

Alternatively Intel could seed a new business
built upon this idea.

A third alternative would be to create a
worldwide standard for secure photography
that many camera manufacturers would
subscribe to and increase interest in using P4
processors for digital imaging in general.

5. Explain how your invention is novel. If
the technology itself is not new,
explain what makes it different.

It is possible to encrypt photographs using
current software however the uniqueness of
this invention comes from closely coupling a
camera to software encryption.

This enables a holistic system that is able to
protect the integrity of image from capture to
display and dissemination and establish a
trusted brand that could be associated with
secure photography.

Currently watermarking within images is used
to prevent unauthorised copying and limit
distribution. This invention uses coded
information within an image to certify its origin
and authenticity.

6. Identify the closest or most pertinent
prior art that you are aware of.

Digimarc - electronic watermarking of
images. Except this is used to track
unauthorised copying of an image rather than
verify its authenticity.

Use of electronic signatures.

BEST AVAILABLE COPY

As within Intel are already
digital imaging and have an
digital photography area such

ing Capability
Capability
as
CE campaign

cure image data

invention to Intel (how
?).

interested in the digital
selling reason to buy a
processing and secure
reasonable amounts of

As within Intel are already
digital imaging and have an
digital photography area such

ing Capability
Capability
as
CE campaign

plugin unlocks
data for viewing

USB or
other
connection

camera writes
image and meta-
data to memory
securely

7. Who is likely to want to use this invention or infringe the patent if one is obtained and how would infringement be detected?

Potential Users:

Digital Camera Manufacturers
Providers of Internet tools and browsers
Providers of Image Manipulation tools

Infringement Detection:

If a company is seen to be offering an end to end solution for secure digital photography particularly incorporating immediate encryption of image data and meta data within a camera's memory then the company will be deemed to have infringed the patent.

BEST AVAILABLE COPY